

TWIN CITY ATARI INTEREST GROUP NEWSLETTER

JUNE 1983

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Secretary: Rick Christianson

Vice President: Dale Pantong
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MAY MEETING NOTES BY MD

If you see a red sticker on your newsletter, you will know that it is time to renew your TAIG membership. The new membership chairman is Tom Moore. Contact him at the next meeting or send in the membership form that has been on the last page of the last few newsletters.

MECC has about 100 programs for the ATARI, which are available to Minn. residents at half price (15/disk). However, schools can give these programs to students free.

The TAIG bulletin board is up about 70% of the them. The number is 432-3779.

The treasurer reported \$960 in the treasury.

The new librarian is Wayne Vassel, #427-7922, and his assistant is Jim Schultz, #537-5442.

Rick Christianson would like feedback from those who had the upgrade done to their 410. Call 771-5629.

Rumor has the 1200 to be recalled and the 400 dropped. Also, a 600 in the mill.

(rumor was close. the new lineup of computers includes a 600XL, 800XL, 1400XL, and a 1450XLD. It looks like prices will range from \$199 for the 600 w/16K&keyboard to \$700 for the 1450XLD-64K, built in modem, speech synthesizer, and double density/double sided disk drive. Heck of a deal. -ed)

The nominations for officers were opened and were; Phil Seifert-Pres, Dale Pantong-VP, Jim Dahlberg-Tres., and Rick Christianson-Sec. No vote was taken and the officers were installed.

(No one offered to take over the editor position, so guess what. -ed)

For Your Information

For Sale: Val-Forth Package, List \$254 but will sell for \$130. Call Al Middleton @ 698-7637.

CARTDISK PLUS UPGRADE: One bug fix, new documentation, and a new 'free' utility. All Preliminary version owners call 542-1027 for more details or send \$6.50 for upgrade (\$5.00 +\$1.50 for diskette).

ATARI MUSIC by Mike Davis

I shall be writing a monthly article concerning the Advanced Music System and Music Composer. To help with the distribution of music files, I'll be assisting in making copies for club members. My address is:

Mike Davis
5701 Quebec Av. N.
Apt. # 307A
New Hope, MN 55428

Home Phone: 536-8214

At this time, I do not have a list of music files for the Music Composer. For A.M.S. the files are as follows:

The Entertainer
Nola
Malaquena
New York, New York
Maple Leaf Rag
Twelfth Street Rag
Some Day My Prince Will Come
Zip-A-Dee-Doo-Dah
Wish Upon a Star
Blue Tango
Syncopated Clock
Take Five
Night and Day
Washington Post March
Perry Mason Theme
Just the Way You Are
Entry of the Gladiators
Comedians' Gallop
Pussycat, Pussycat
White Christmas

Have Yourself a Merry Little Christmas
Sleigh Ride
Rudolph, The Red Nose Reindeer
Marshmallow World
Winter Wonderland
Music Box Dancer

I wish to thank Lee Actor for 5 of the above songs. If you have any songs that you have completed using either Music Composer or A.M.S., please send them in. Each month, I'll list the new songs along with the member's name. Next month, I'll have the Music Composer files listed also.

CHILDREN WILL PLAY
BY PHIL SEIFERT

Hello there, I have returned from the Chicago CES. And, boy! did I see a lot of new games. I will tell you about them in next month's newsletter. On to bigger and better things. I would like to talk about a new software company headed by a person named Steve Wozniak. If you do not know who he is then I think you should study the history of Apple computers. He was one of the original designers of the computer we all know and hate. His new company is called Electronic Arts and you will be hearing a lot about them in the coming months. The first and I think the greatest of their programs is Archon written by the people who did Tax Dodge, Free Fall Associates. This program is a combination of chess, Dungeons & Dragons, and a lot of frustration. Just ask the last guy I defeated. Good thing this program will allow you to play the computer for practice. There are two sides with a variety of characters ranging from knights to shapeshifters. There is also a wizard on one side and a sorceress on the other to allow some casting of magic. This creates a very interesting game. Each piece is allowed to move a certain distance by ground or air. This can be done in any direction (ground pieces may have to go around). If two pieces try to occupy the same square, then, a battle to the death follows. The screen will enlarge around the disputed square and the pieces fight it out according to their ability and strength. Most of them have the type of weapons that allow shooting the opponents, but the knights and goblins fight it out with swords and clubs respectively. Then there are the banshees and the phoenix which require surrounding the enemy with a field of energy-draining forces or fire. If you are interested in a very good game then this one, I think, is the one to get. Archon retails for \$40 and is well worth it. Unfortunately, Archon only comes on diskette. The next program I would purchase is also from Electronic Arts. It is the Pinball Construction Set. This thing will allow the user to create his/her very own pinball table. Just think, place bumpers, ball eaters, targets, and all sorts of little things anywhere you would like on the board. You can even change the shape of the table. One of my favorite boards I have created has invisible everything, including the flippers. This program is a must see to believe. The Pinball Construction Set also comes only on diskette and retails for \$40. See it at our next meeting. If hot and heavy games or pinballs are not your cup of tea, then maybe Electronic Arts next program will be more to your liking. It is called M.U.L.E. This is a very interesting variation of the Hamurabbi type game. You, as one of the four colonists, must set up your land claims, develop the property, and auction the goods to make a profit. The one with the highest total at the end of the game wins. All this is done very graphically and as much as I hate this game style, this one I am very fascinated by. You make think by the preceding sentences, that this is a four player game only. You are right, but, the computer will play any players who are not entered. So, there are always four colonists. Again, this program only comes on diskette and retails for \$40. It is another one of those must haves. Electronic Arts has also released another program for the Atari. It is called Worms. This program is more of a study in artificial intelligence (I hope I spelled that right). I really did not care for this program but some of you high classed thinkers out there might. It is \$40 and comes on diskette. These are the programs released so far for the Atari from Electronic Arts. They are coming out with a few more. The first one to look for will be Hard Hat Mack. This is another one of those games in the Donkey Kong mode. I have seen the Apple version and I think this game could hold some promise if they utilize the Atari's features. The second game I know they are releasing is called Murder on the Zinderneuf. As far as I can tell, this is supposed to be an adventure of some kind. I do hope they release Axis Assassin for the Atari. This one is a Tempest-like game on the Apple. All of these programs will be \$40 on diskette. Like I said in the beginning of this column, this is one company to keep an eye on. Take that, you slimy dragon! Electronic Arts is not the only company that has released some good software this month.

Believe it or not (isn't that a song?) Atari has started shipping some very interesting programs. Both are on cartridges. Both of them were popular arcade hits. Both of them will cost \$45 retail. One is called Dig Dug and is very faithful to the original. The other is Donkey Kong. That is all we need, another Donkey Kong type game! This version is super and has all four screens that are in the arcade version. Both of these programs will be shown at the next meeting. Come and see them! That will wrap it up for this month. I think it will interest you to know that I am typing this on our newsletter editor's computer the day before he puts it together. Now I wish he would let me go back to playing Archon, M.U.L.E., Pinball Construction Set, Dig Dug, and Donkey Kong. Can I go home now Todd?

FAMILY FINANCES REVIEW
by RAR

FAMILY FINANCES is a software package put out by ATARI which has been designed to give detailed information on the users personal finances. The software package is divided into two programs - FAMILY CASH FLOW and FAMILY BUDGET.

The FAMILY CASH FLOW program will allow the user to track as many as 100 expense entries in 13 categories per month and 20 income entries in 13 categories per month. This is the capacity of the program when used with a single disk drive. With dual disk drives the capacity dramatically increases to 100 income entries per month and 220 expense entries per month. In entering my expenses for each month I found that a 100 entry limit was by far plenty.

The FAMILY CASH FLOW program has a series of menus that take you through its many options. One option is to review your finances. With this option you can get an overall view of your finances for the entire year, showing variances and accumulated totals for income and expenses. Other options allow you to enter, change, delete and review entries for both income and expenses. I found that manipulating entries was very straight forward and easily done. I decided that I would get the most out of this package if I entered my financial data starting at the beginning of the year. The FAMILY CASH FLOW program gave me a good clear understanding of where my money was going.

The FAMILY BUDGET program allows the user to set up a budget using the data entered in the FAMILY CASH FLOW program. This program also has some nice menus that guide you through the budget process. This program allows you to evaluate your spending habits and efficiently plan and budget your money for the year. FAMILY BUDGET will allow you to review your data on either a yearly or monthly basis in a number of different formats.

Some other notes on FAMILY FINANCES. Both programs support printers, which is essential for this type of program. The documentation is very readable and contains many examples. FAMILY CASH FLOW and FAMILY BUDGET together make an excellent financial package which can be an asset for any household. This user is very pleased with the product.

From the Editor
by TRB

Well, this is another newsletter making it to the printers at the last minute. Please excuse the variety of print styles in this newsletter, since I had to use my FX-80 on this one to get my last minute articles typed in. I will repeat my plea for articles once again. If you have anything you want to see in a column or feel like starting one yourself, just give me a call (Todd Burkey) at 542-1027. I know it is hard to think of typing in articles in the summer, but give it a try anyway.

Good old page 6. I guess it must be about 4K long. Well, not really, but if it were it might be able to hold all those short assembly language routines that are put there by people who write articles for magazines. They are always showing some sort of nice little programming trick in assembly language and then saying that a good place to put it is on page 6. Ever hear someone say "hey, lets put this one one page 7"? How about page 4 or page 26?

Nope! Always page 6. The one thing none of these people mention is that they all have the IRATA page 6 bank select RAM chip. Originally this chip was made available through a box top offer from IRATA when one purchased IRATA's right cartridge BASIC enhancement package, and all these people who had machines then naturally grabbed the offer. Well, it just turned out that the BASIC enhancement package had a bad bug in it that was never fixed (caused a lock up during editing I heard) and had to be dropped due to the fact that the consumer would never accept such a flawed product. But, the page 6 bank select chip that people who got with the box top offer worked due to a FEATURE of the old DOS 1.

Apparently the people who write the page 6 machine language articles are not aware that most people don't have page 6 bank select RAM chip that was dropped along with the BASIC enhancement right cartridge, and even if they did have it, most users are now going with DOS 2, which won't support the page 6 bank select chip.

Now, if you are one of the many who don't have the page 6 bank select chip and therefore ran out of page 6 in Oct. of '81, here is a thought about what to do, specially if you plan on writing an article for a mag.

1. Make your code RELOCATABLE so that
2. It can be placed in a BASIC USR statement using a string.

This means you can't do JSRs to your own code because you have no way of knowing what the address of the code will be by the time it is in the BASIC program. Same for JMPs. Right? Wrong!

You can JSR or JMP into and out of relocatable code because you have a way of finding out where you are after the code is in place. But, you do need a very short piece of fixed code you can JSR to, and a good place for it is on page 6. SAY WHAT! PAGE 6! That's right, Let's use page 6 as a resource rather than just a place to keep code!

Here is the fixed code we'll call
WHERE AM I that finds out the address
of the next byte after the JSR that
calls it.

It is used once to find your
present location in memory, then can
be ignored. The present location is
stored harmlessly in the cassette
buffer till it is no longer needed.

What you do with the address

```

10 HERE=$3C0
20 WAMI=$680
30 *=$680
40 TSX
42 CLC
50 LDA $101,X
52 ADC #1
60 STA HERE
70 LDA $102,X
72 ADC #0

```

should be fairly obvious, it can be
added to offset values and the result
stored ON PAGE 6 as vectors to the
routines of your code which before
you only knew the offset to but not
the actual address.

```

80 STA HERE+1
90 RTS
100 *=$600
110 JSR WAMI
120 BRK HERE & HERE+1
now have THIS address!

```

The original code calls the subroutines by a JSR to the page 6 locations that are set up to be a JMP instruction + your calculated address, just like the OS vectors.

Its like what happens when the CIO routine is called by doing a JSR \$E456. List out \$E456 and you find a JMP 0000. When the routine does its RTS it goes back to the JSR that called it, not the JMP at \$E456.

The bottom line is that never again do you need to worry about a place to put those short machine language routines when page 6 is full up. A little extra effort is required to set up vectors on page 6 but well worth the price when it saves you the embarrassment of trying to sound like you know what you're doing and two breaths later saying "a good place to put this code is page 6."

One more thought worth mentioning about making relocatable code is the use of "bucket brigades" as substitutes for JMPs. Doing a CLC immediately before a BCC turns the BCC into an unconditional jump. This is a nice little trick since the jump, by the nature of it really being a branch is going to an offset, and therefore relocatable. The hitch is that branches are limited to + or - 127 bytes, you can't GO TO more than 127 bytes of code in either direction from where you are. That is, you can't go more than 127 bytes AT ONE TIME.

What happens if the place you "branch" to is another BCC instruction? The Carry is still clear so it's simply another unconditional branch, and you can carry on all the way from page 0 to the top of memory by using this "bucket brigade" of BCCs. The only inconvenience is that these BCCs must be strategically slipped into the code you are skipping over so as their presence will not effect that code. Look for things like RTS and BCC to slip your BCC in behind. Even a SEC where the only way the BCC will be acted on is if it's "jumped" to.

All this will make someone who at some time in the future disassembles your code, scratch their head and wonder about the sanity of a programmer who would Set the Carry and then do a branch if the carry were clear, but we won't worry about making sense to others as long as we make sense to ourselves.

One more thing before I give you brain strain from my "state of the art technical writing" is that for those of you who are interested in going big time in the land of relocatable machine language, see COMPUTE Feb. '82 pg. 78. This is an altogether different situation for doing the job to whole programs and would be a bit of overkill to try to apply it to a short BASIC USR routine, but I mention it so that no one attempts the converse of applying the above methods to make an 8K machine language program relocatable.

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Beginning Assembly by Todd Burkey

Last month I covered the modes of variable assignment in an assembly code environment. This month I will cover some of the conditionals used in assembly code.

A conditional is a statement that provides a language the capacity to make a decision based upon some factor. In assembly code, this factor is the result of a previous commands' execution. Depending on the type of conditional and the factor, the flow of an assembly code program will branch (goto) forward or backward a predetermined number of commands. In a BASIC framework, think of this as using the BASIC construct:

```
IF (factor=true) THEN GOTO line#
```

except that the GOTO is relative to the position of the command in the code. The status flags (see last month's article) are the factors that are used for conditionals and should be thought of as single bits that are either equal to zero (reset), or equal to one (set).

Using two commands that I covered last month and one command that is covered below, you already know enough to understand the following example:

```
LDX #$40      <--X=64
LOOP1 DEX      <--X=X-1
      BNE LOOP1
```

and you have a loop that will execute 64 (40 hex) times. The following summary of commands cover all of the 6502 branching (goto/gosub) commands except for those dealing with interrupts (which I will cover at a later date.)

```
*****
* 6502 COMMAND: BEQ (BRANCH IF EQUAL) *
*****
```

BASIC Equiv.: IF Z=0 THEN GOTO

```
example-
assembly code  Basic code
      BEQ LOOP10      IF Z=0 THEN GOTO 10
```

The Branch If Equal command does just what is says, it performs a branch to another line of code if the most recent command that affected the Z flag caused the Z flag to be zero. This is one of the flags I referred to when I discussed the LDA command. The Zero flag will generally be reset to zero whenever a command is executed that results in a zero value being loaded into the accumulator, memory or the X/Y registers. For example, LDA #\$00 or LDX #\$00 will each set the Z flag to zero. Also, if memory location \$80 contained the value 1 and you decremented that memory location (via DEC \$80) then the Z flag would also become 0.

```
*****
* 6502 COMMAND: BNE (BRANCH IF NOTEQ) *
*****
BASIC Equiv.: IF Z=1 THEN GOTO
```

```
example-
assembly code  Basic code
      BPL LOOP10      IF Z=1 THEN GOTO 10
```

Same function as the BEQ command, except that now the branch is performed if a prior operation resulted in a value not equal to zero (which would set the Z flag to be equal to 1).

```
*****
* 6502 COMMAND: BPL (BRANCH IF PLUS) *
*****
BASIC Equiv.: IF N=0 Then goto
```

```
example-
assembly code  Basic code
      BPL LOOP10      IF N=0 THEN GOTO 10
```

You get to do a little more remembering now. All numbers from 0 to \$7F are considered non-negative, so any operation that yields a number will also cause another status bit to be set to 0 or 1. This bit is the N flag and is set to 1 if the number is negative and to 0 if the result is positive. So this command (BPL) allows you to branch somewhere if the previous operation produced a non-negative (plus) result.

```
*****
* 6502 COMMAND: BMI (BRANCH IF MINUS) *
*****
BASIC Equiv.: IF N=1 then goto
```

```
example-
assembly code  Basic code
      BMI LOOP10      IF N=1 THEN GOTO 10
```

Just like the BPL command but the branch only occurs if the operation yielded a negative number.

```
*****
* 6502 COMMAND: BVC (BRANCH if V clr) *
*****
BASIC Equiv.: IF V=0 then goto
```

```
example-
assembly code  Basic code
      BVC LOOP10      IF V=0 THEN GOTO 10
```

The V flag is usually used when dealing with signed arithmetic, so this command is used very infrequently on the ATARI. Basically, the V flag is set to one when the result of the previous operation causes an arithmetic overflow. So, this branch will occur if there was not an overflow condition.

```
*****
* 6502 COMMAND: BVS (Branch if V = 1) *
*****
Basic Equiv.: IF V=1 THEN GOTO
```

```
example-
assembly code  Basic code
      BVS LOOP10      IF V=1 THEN GOTO 10
```

Just like the BVC command, but the branch occurs if the previous result caused an overflow.

```
*****
* 6502 COMMAND: BCC (BRANCH Carry Clr) *
*****
BASIC Equiv.: IF C=0 then goto
```

```
example-
assembly code  Basic code
      BCC LOOP10      IF C=0 then goto 10
```


Don't worry, this is the last flag that you will have to worry about for a while. The C flag is set to one if the previous operation caused a carry condition to occur. It will be set to 0 if the result was a borrow (subtract). This ability to branch conditionally upon a carry situation comes in useful when you are doing arithmetic in assembly code and will be discussed when we get to the arithmetic instructions.

```
*****
* 6502 COMMAND: BCS (Branch if Carry Set) *
*****
BASIC Equiv.: IF C=1 THEN GOTO
```

example-
 assembly code Basic code
 BCS LOOP10 IF C=1 THEN GOTO 10

Just like the BCC command except that the branch occurs after a operation that resulted in a carry.

```
*****
* 6502 COMMAND: JMP (JUMP) *
*****
BASIC Equiv.: GOTO
```

example-
 assembly code Basic code
 JMP LOOP10 GOTO 10
 JMP (\$10) GOTO DPEEK(16)

This one is easy. When the program executes this command, program flow goes unconditionally to the location jumped to.

```
*****
* 6502 COMMAND: JSR (Jump SubRoutine) *
*****
BASIC Equiv.: GOSUB
```

example-
 assembly code Basic code
 JSR LOOP10 GOSUB 10

Also easy. JSR functions just like the BASIC GOSUB command.

```
*****
* 6502 COMMAND: RTS (Return Subroutine) *
*****
BASIC Equiv.: RETURN
```

Easier yet. This command returns program flow to the instruction after the last JSR that was executed.

Well that is all I have time for this month. I won't be able to make it to the June meeting, so see you in July.

PRESIDENTIAL NOTES BY PVS

Those of you who did not attend the last meeting missed my assumption of the presidency. Now hear this, you bunch of lardheads. I, Phil Seifert, have assumed command of this group. I would like to thank all the former officers for their help in the last year keeping us in business. I would really like to wish Steve Crowley, our founding president and just replaced vice-president, good luck in his official retirement from our group leadership. You know, it really is too bad none of you out there wanted to be president. If you were, you might have been invited to Chicago for

the CES by Atari. That's right, Atari paid for my hotel and airfare to Chicago. I think they are trying to establish a better relationship with the user's groups around the country. They flew about ten presidents and invited us to their official presentation of the new Atari line of hardware and software. I will talk more about this at the meeting. I would also like to point out to those of you who may not have heard, that Alan Alda (Hawkeye) is now the official Atari spokesman for the next five years. It seems that Atari is really going on an allout campaign to establish themselves as the leader of the home micros. If they continue to support the user's groups and Mr. Alda does some nice p.r. work then I think they just might succeed. Only one more thing I would like to discuss. I would like to see some more volunteers for various activities of the group. If anyone has activity ideas and would like to spearhead them, then by all means come talk to me. I promise I won't be playing games. See you at the meeting on June 26.

Questions and Answers by BBB

I received one question in the mail this month and I'm currently trying to come up with an answer (help, Mike!). The question dealt with how to get the ATARI to simultaneously print out to the screen and the printer from a Basic program without putting two print statements in the program. My husband says the solution is to set up a special device handler, but that it is not a trivial matter to write it. I hope to have more on this next month. Meanwhile, I will repeat my offer of last month. Anyone having a question for which they can't find an answer, jot it down and send it to me, call me, or talk to me at the monthly TAIG meeting. I will do my best to track down an answer for you.

My address is:
 Barbara Burkey
 3546 Pilgrim Lane
 Plymouth, MN 55441
 542-1027

Since I don't have an answer to my very first question (sorry!), I agreed to help out the editor by writing a review on a new program. The program is TIMEWISE from ATARI (about \$30 retail) and is declared as a time management program. First of all, I have serious misgivings about a person finding time to keep a computer account of activities and future engagements, if they can't keep a calendar record of appointments. Therefore, I read the documentation with interest. The list of options see to cover most possibilities I could come up with. You can delete old appointments, fill in new appointments, search for specific appointments, and set up constants like payroll days, bill paying days, holidays, etc. The appointments can either be displayed on the screen or printed. Included on the printed agenda is a calendar of the current month helping to put everything into a monthly perspective.

All-in-all, the program worked the way the documentation said it would, the documentation seemed complete including a color-coded reference next to the page numbers, and the program could be quite useful for someone diligent and conscientious enough to use it.

DAN ON PRINTERS by Dan Buchler

I was recently asked to make a presentation on printers to the Apple group at my place of work. Part of that presentation was on the differences between the Epson dot matrix printers, the C. Itoh, Prowriters and the Apple Dot Matrix Printer.'

In 1980, Epson took the market by storm with the MX-80, with which, within about 18 months, they had captured about 50% of the world market for DMPs. What was it about the Epson that made it sell? Reliability and quality. Before the Epson, printers broke down. Epsons hardly ever did. Letters and dots on the Epson lined up perfectly from line to line.

Then, in late 1981, C. Itoh appeared on the scene with its Prowriter line. C. Itoh is really an importer of a line of printers built by the Japanese company TEC. TEC also makes the NEC DMP printer mechanisms. Subsequently, Apple selected C. Itoh/TEC as its supplier of DMPs. Experience with the C. Itohs seems to indicate a reliability and quality equal to that of the Epson MX-80/100. I'm an old Epson fan, having organized the first bulk purchase of 22 Epson MX-80s during February and March, 1981, of which one became my first real printer. But I will admit that the C. Itoh has a lot to offer.

Before we start, for the benefit of beginners, let us define what a Dot Matrix Printer (DMP) is. A DMP forms characters in exactly the same way as they are displayed on your monitor screen -- out of dots. For example an a looks like:

```

....      or      . . .      or      . .
.           . . .      . . .      . . .
....           . . .      . . .      . . .
. .           . . .      . . .      . . .
.....           . . .      . . .      . . .

```

In the print mechanism, the print-head contains a vertical or near vertical row of pins or wires which are activated by little electro-magnets. The head moves horizontally across the paper, and the magnets are activated whenever a pin or wire lines up on the paper with a position where a dot is desired.

In the early days of such printers, mid 1970s, there were usually 7 wires, and the printers would print characters constructed out of a mesh of 7 dots high and 5 dots wide at rates up to 200 characters/second.

As we entered the '80s, users demanded a better looking character, so most printers started using 9 wires. Most of the improvement in character appearance was achieved by adding descenders and improving the accuracy at which the dots were laid down on the paper. Descenders are the little tails that go below the belt on such characters as g,p,q and y. Now the appearance of characters is even more improved by constructing characters out of a 12 wide matrix of dots or even 24 wide.

The C. Itoh includes the Apple DMP. The MX-80 includes the MX-100 (and also the IBM PC printer and a few others who private label the MX-80)

The FX-80 is the new Epson offering which has only recently appeared on the dealers' shelves.

Comparison of 3 DMPs

Item	C. Itoh	MX-80	FX-80
Reliability	Proven	Proven	Note 1
Bi-direction paper motion	Yes	No	Yes
Proportional spacing	Yes	No	Yes
User defined character set	Yes	No	Yes
Graphic Resolution, dots/inch. Note 2	160/144	120/216	240/216
Italics	No	Yes	Yes
Greek characters	Yes	No	No
Block graphics	Yes	Note 3	No
Superscript	Note 4	Yes	Yes
Speed (cps)	120 Note 5	80	160
Standard spacings characters/inch	10,12,17	10,17	10,12,17
Double wide (usable with all spacings)	Yes	Yes	Yes
Buffer size	1 page	1 line	1 line
Tractor	Standard	Standard	Optional
List Price - Note 6	\$495	\$695	\$699?

Notes

1. I've seen at least one example of a graphic printout made with the FX-80 in which the relative alignment of dots from row to row was very poor. Also I heard that one dealer had some problems with several printers. These may only be teething problems, but beware!

2. Horizontal/Vertical. The MX-80 and FX-80 have the ability to vertically move the paper in 1/3rd dot increments. Hence, even though the MX-80 has a 1/72nd dot vertical resolution, careful software can achieve a resolution of 1/216th of an inch as demonstrated in the Gutenberg Word Processing package. The FX-80 has a graphic mode called quadruple density in which dots are put down at 240/inch. The catch is that the time between dots as the head moves across the paper is so short, about 1/2000th of a second, that the print pins can not be energized for 2 consecutive dots. In actual practice, it is the edge resolution which counts, and with appropriate software, this need not be a problem.

3. The older MX-80s, before Graftrax Plus, had block graphics, but Epson considered this a not too useful feature and took away the capability.

4. Superscript: The MX-80 and FX-80 provide a superscript/subscript print mode in which characters are created in condensed size at half height. (This is achieved by making two passes across the paper and interleaving dots by upspacing 1/2 a dot between passes - a similar technique to double strike). With the C. Itoh, you can upspace or down space the paper to create a sub or superscript but the character printed will be a regular size character.

5. Though the C. Itoh prints across the page slower than the FX-80, it moves paper faster, so the effective print speed is about the same.

6. Discounts are readily available. The C. Itoh often sells around \$400, and both the FX-80 and Apple will sell with discounts that vary between 5 and 15% (sometimes more).

As was said at the beginning, there are other printers, and one of those may suit you better — but, if you are not sure.....



News from the library

Those of you who missed finding out what was on last month's disk, (May 83) here is the list.

OILGAME.REV	Drill wells, make \$
SHADING	Cube color demo
COMBAT	Do battle with monsters
MODEM3	Modem/disk utility
CARDS	Program your own game
DISKDUMP	Disk/printer utility
FIVESTUD	Beat Albert at cards
CHEMQUIZ.BAS	Educational
LEYTE.II	War game
SUPRCUBE.2	Try it and see

Disk #20, (June 83) will have the following programs.

OUTERSPA.CE	Shoot down invaders
DUEL	Artillery battles it out
MINER	Down,down,down.....
SUPSLOTS.B01	Still another slot game
ALIENCAP.TUR	Capture enemy vessel
PAINTDUE.16K	Duel with big bird
MAILMAN	Delivering mail can be rough
MATCHKID.S	High number math game
FUNCPL0T.UTL	Neat graphics display
STRATEGY	Would you believe Stratego
TREASURE	Find lost treasure
STARDSTR	Penetrate star system
PROGRAM.NO	Prime number program

For all new members and present members, you can get back programs in these ways. 1) Buy a disk or a cassette of programs at the meeting or directly from Wayne Vasek, 12114 Crooked Lake Blvd., Coon Rapids, Minn. 55433. 2) Order programs individually from Jim Schulz (537-5442) or Randy Miller (483-3029). 3) Make your own copies at the meetings.

Pre made disk's cost \$4.00 and cassettes \$3.00. All others no cost. If mailed to you please include \$1.00 for mailing.

For those of you interested in Music Composer & or AMS you can contact Mike Davis at (536-8214) and place your orders with him.

A special word of thanks to Mr. Fred Evermon for donating the cassette cases that the cassette of the month now comes in. This I am sure is well appreciated by all club cassette members.

If you have any questions please ask me at the meeting or call Jim or Randy. Thank you.



If you thought the 1400XL Computer was the ultimate in Home Computer technology, meet a computer with all that and more. It has 64K, built-in modem and built-in speech capability. But we might have noticed, we call it the 1450XLD™ The D stands for disk drive. Built-in double-sided, dual density disk drive for more storage and faster data transfer speeds.

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YOUR ONE-STOP PRINT SHOP

SORRY TO KEEP REPEATING OURSELVES, BUT IF YOU ARE THINKING ABOUT PURCHASING A PRINTER FOR YOUR ATARI, WE URGE YOU TO CONSIDER THE PROWRITER. IF YOU DON'T KNOW WHY (BECAUSE YOU'VE JUST RETURNED FROM A ONE YEAR SABBATICAL TO ANARTICA OR SOME SUCH REASON), GIVE US A CALL AND WE'LL BE GLAD TO TELL YOU ALL ABOUT IT OR SET UP A DEMONSTRATION FOR YOU.

UNLIKE SOME OF OUR COMPETITORS WHO HAVE JUST RECENTLY JUMPED ON THE PROWRITER BANDWAGON, WE HAVE BEEN SELLING THESE PRINTERS SINCE THEIR INTRODUCTION LAST SUMMER. WE ARE A FULL STOCKING PROWRITER DEALER, AND TRY VERY HARD TO KEEP THE PRINTERS IN STOCK AT ALL TIMES (BARRING AN UNUSUAL SALES PATTERN.) WE HAVE SOLD MANY, MANY OF THEM TO ATARI OWNERS; WE CAN SHOW YOU HOW TO PROPERLY HOOK IT UP TO YOUR COMPUTER, AND CAN ALSO ADVISE YOU ON SOFTWARE TO USE WITH IT FOR WORD-PROCESSING AND GRAPHICS.

WE ALSO CARRY A COMPLETE LINE OF PRINTER ACCESSORIES SUCH AS PAPER, RIBBONS, CABLES, AND INTERFACES (YES 850'S ARE BACK IN STOCK!).

DUE TO THE HIGH VOLUME OF SALES, WE HAVE DECIDED TO ONCE AGAIN REDUCE OUR PRICE ON THESE SUPERLATIVE PROFESSIONAL WRITERS TO
\$399.00!! THIS PRICE IS FOR TAIG MEMBERS ONLY;
MEMBERSHIP CARD MUST BE SHOWN TO QUALIFY.

SOFTWARE CLEARANCE

IF YOU ATTENDED THE LAST CLUB MEETING, YOU MAY HAVE HEARD ABOUT OUR GIGANTIC SOFTWARE CLEARANCE NOW IN EFFECT. WE ARE TRYING TO MOVE SOME OLDIES-BUT-GOODIES -- AND SOME NOT-SO-OLDIES AS WELL -- AND TO DO SO HAVE SLASHED PRICES TO OR BELOW COST. SOME EXAMPLES: CHOPLIFTER -- \$22.00; BANDITS -- \$22.00; EASTERN FRONT -- \$20.00; STAR RAIDERS -- \$30.00. WE HAVE A NUMBER OF EDUCATIONAL PROGRAMS ALSO ON CLEARANCE. IF THOSE PRICES AREN'T ENTICING ENOUGH, MAKE AN OFFER! NOTE THAT THIS SALE IS IN EFFECT WHILE SUPPLIES LAST. CALL FOR MORE INFORMATION ABOUT PARTICULAR ITEMS, OR MAKE IT A POINT TO STOP BY OUR TABLE AT THE NEXT TAIG MEETING.

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Next TAIG Meeting:
Sunday, June 26, 1983
TAIG - 7:00 P.M.

Odd Fellow's Lodge
3003 27th Ave. S.
Mpls, MN